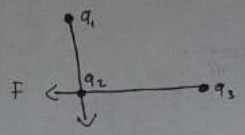
Gracee Sukma F. Dolok Saribu
XII MIPA 6.

FISIKA – LISTRIK STATIS

1.) $F = k \cdot \frac{q_1 \cdot q_2}{r^2}$



* Muatannya sama, maka gayanya saling menolak

Karena ada 2 arah maka menggunakan vektor.

$\Sigma F = \sqrt{F_1^2 + F_2^2 + 2F_1 F_2 \cos\theta}$

$= \sqrt{F^2 + F^2 + 2F_2 \cdot \cos 90^\circ}$

$= \sqrt{F^2 + F^2 + 2F_2 (0)}$

$= \sqrt{2F^2}$

$= F\sqrt{2}$

2.) diket : $q_1 = +9\ \mu C$

$q_2 = -2\ \mu C$

$r_1 = 10\ cm = 10 \times 10^{-2}\ m$

$r_2 = 5\ cm = 5 \times 10^{-2}\ m$

dit : $E_A = \ldots ?$

Penye : $E_1 = k_q \cdot \frac{q_1}{r_1^2}$

$= \frac{9 \times 10^9 \times 4 \times 10^{-6}}{100 \times 10^{-4}}$

$= \frac{36 \times 10^7}{100}$

$= 0{,}36 \times 10^7$

$E_2 = k_q \cdot \frac{q_2}{r_2^2}$

$= \frac{9 \times 10^9 \times 2 \times 10^{-6}}{25 \times 10^{-4}}$

$= \frac{18 \times 10^7}{25}$

$= 0{,}72 \times 10^7$

$E_A = E_1 + E_2 = 0{,}36 \times 10^7 + 0{,}72 \times 10^7$

$= 1{,}08 \times 10^7$

3.) diket : $q_A = 5 \times 10^{-8}\ C$

$r_A = 10\ cm = 10 \times 10^{-2}\ m$

$q_B = -40 \times 10^{-8}\ C$

$r_B = 20\ cm = 20 \times 10^{-2}\ m$

$q_C = 8 \times 10^{-8}\ C$

$r_C = 10\ cm = 10 \times 10^{-2}\ m$

dit : V di titik O = ... ?

Penye : $V = k \cdot \frac{q}{r}$

$V_{tot} = V_A - V_B + V_C$

$= k\frac{q_A}{r_A} - k\frac{q_B}{r_B} + k\frac{q_C}{r_C}$

$= 9 \times 10^9 \left(\frac{5 \times 10^{-8}}{10 \times 10^{-2}} - \frac{40 \times 10^{-8}}{20 \times 10^{-2}} + \frac{8 \times 10^{-8}}{10 \times 10^{-2}} \right)$

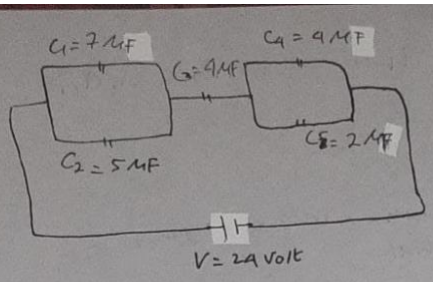
$= 9 \times 10^9 \left(0{,}5 \times 10^{-6} - 2 \times 10^{-6} + 0{,}8 \times 10^{-6} \right)$

$= 9 \times 10^9 \left(-0{,}7 \times 10^{-6} \right)$

$= -6{,}3 \times 10^{-3}$

$= -6.300$ Volt

4.)



$C_{p1} = C_1 + C_2$

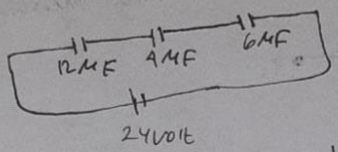
$= 7\,MF + 5\,MF$

$= 12\,MF$

$C_{p2} = C_4 + C_5$

$= 4\,MF + 2\,MF$

$= 6\,MF$



$$\frac{1}{C_{ek}} = \frac{1}{12} + \frac{1}{9} + \frac{1}{6} = \frac{2+6+9}{24}$$

$$\frac{1}{C_{ek}} = \frac{12}{24} = C_{ek} = \frac{24}{12} = 2\,MF$$

Muatan total

$Q = C_{ek} \cdot V$

$= 2\,MF\,(24V)$

$= 48\,MC$